607/99

A Further Study of Endothermy in Accessible Malignancy

LIBRARY
JAN 12 1925
U. S. PATENT OFFICE

By GEORGE M. WYETH, M. D.
New York

It is the purpose of this paper to call attention to endothermy, a treatment of accessible malignancy which greatly reduces the danger of metastasis and the likelihood of recurrence by removing the growth as a necrotic mass instead of as a group of viable cells.

Endothermy is the production of heat in the tissues from within and embraces two procedures, desiccation and coagulation. As developed by Dr. William L. Clark, of Philadelphia, this method has, over a period of fifteen years, proved of ever increasing value in the treatment of accessible malignancy and precancerous conditions. Sufficient time has not yet elapsed for me to use the word cured, and this report is a preliminary one.

In the squamous cell variety of epithelioma and the more malignant and persistent forms of accessible cancer, particularly in lesions in and about the mouth which metastasize early, are difficult of removal by the knife and are uncertain in their response to treatment, endothermy is of the highest value. Lip lesions are removed under local anesthesia. Any portion of a tongue can be coagulated and immediately removed. A cancer of the floor of the mouth can be coagulated *in situ* and the necrotic mass removed in one operation. Bony structures, alveolus, hard palate and portions of the lower jaw can likewise be treated and removed with the same degree of precision.

To its first great advantage of reduced likelihood of metastasis and recurrence endothermy adds another, the prompt alleviation of pain. If we consider the technic of the treatment we see why this is true.

607/99

The first step in the procedure is to describe in the healthy tissue a ring of destruction around the malignant area. That is, before a malignant area is touched it is completely surrounded by a wall of coagulation necrosis which shuts off and destroys the blood vessels and lymphatics to and from the affected parts. After this, the malignant growth is completely destroyed *in situ* by dividing it into sections and then coagulating or desiccating each small area. Just how much current shall be used and for how long, the operator learns by experience. Conservation demands, however, that one should overtreat rather than undertreat, for a stimulating dose is worse than no dose at all.

FIG. 2.—Meat treated by heavier current. Note depth of heavy coagulation at the left. In the centre a Paquelin cautery, heated to a red heat, penetrated the meat at this point and was kept going for half a minute. The effect is merely a surface burn. At the right the Paquelin applicator was thrust cold into the meat and then given 1,000 ma. for the same length of time by attaching one pole of the bipolar current. Note depth of coagulation.

After the lesion has been completely destroyed it is either curetted away or removed by scissors, leaving a clean base.

FIG. 3.—Case III, A. J. V., aged seventy-seven, epithelioma of right ear, healed after coagulation. Artificial ear made by Mr. O. A. Ilkins, New York, formerly of Walter Reed Hospital.

This base is again treated by searing over with the current to assure a further penetration by the heat and to destroy any malignant cells that may still remain.

If the work is properly done there should be no hemorrhage whatsoever. By deep penetration beyond the malignant area we render the tissues bloodless. Should by any chance a bleeding point be encountered it is easily controlled by focusing the current on it for a second or two until the heat is sufficient to stop it. Secondary hemorrhages do not often occur. However, they have happened in isolated cases and were I to work in close proximity to a blood vessel like the carotid I should do a preliminary ligation. Or, it might be advisable to wait for a week or ten days after the operation when the slough begins to come away.

It is not difficult to understand that this same line of coagulation necrosis drawn about the malignant area to cut off blood vessels and lymphatics cuts off, also, the sensory nerves and as the malignancy is removed the pain is alleviated. Unless the malignancy recurs there is no recurrence of pain. The value of endothermy, therefore, in that large group of so called inoperable carcinoma is very great. Though used in such cases without hope of cure it provides an alleviation of suffering. In addition, the sterilizing effect of the intense heat upon a foul, discharging area is appreciated by the patient for it renders his wound less offensive. One can

Case IV, D. G., aged sixty-six, squamous cell epithelioma of nose, healed after coagulation.

FIG. 5.—Case IV six weeks after operation.

Six months after operation.

Artificial nose by O. A. Ilkins.

scarcely overestimate the importance of these features of the method, particularly in the treatment of lesions in and about the mouth. In such cases the small remaining slough comes away in from two to three weeks and the area is completely

healed within a few days thereafter. The patient can thus enjoy that early return to normal diet which is of the highest importance. Since most of these patients are markedly cachetic, anemic and badly run down, their chief post-operative need is nourishment, and in a floor of the mouth case I have seen the patient gain fifteen pounds within three months after operation.[1]

Now a further word as to the nature of this method and its application. Endothermy, the production of endogenous heat, destroys, by the electrothermic processes of desiccation and coagulation, diseased tissue and accessible new growths. The precancerous dermatoses, including the various forms of keratoses, acanthoma, benign and malignant warts, moles, chronic ulcers, papilloma, lupus vulgaris, and lupus erythematosus, x-ray dermatitis and other skin lesions which may become epitheliomatous, as well as epitheliomas themselves, can be removed by desiccation.

Herewith are presented reports of two cases treated satisactorily by this procedure:

Case I.—C. H., aged sixty-two, had been variously treated for eighteen years for lupus vulgaris of the left face and head. The many x-ray treatments had resulted in a marked chronic x-ray dermatitis. Several months ago an epithelioma began to develop in his left cheek. Resisting treatment, this had progressed until at the time patient came to my attention, the wound was ulcerated and suppurating. Patient's chief complaint was the constant discharge of pus. Under ether narcosis the whole area was desiccated and curetted down to a clean base. Observe the good cosmetic result.

In the *Journal A. M. A.*, October 26, 1918, will be found an article by Dr. Clark giving a table and analysis of two hundred cases of cancer of the oral cavity, jaws and throat. These cases were all treated by endothermic methods or by endothermy in combination with surgery, x-ray, and radium.

Case II.—J. K., aged fifty-seven, was treated by desiccation for depressed epithelioma in the wing and tip of right nose. Commencing about two years ago as a scab or scale, which broke down and refused to heal, this lesion grew to be about quarter of an inch in diameter and extended almost to the mucous membrane on the inner surface of the nose. This would have been difficult to excise but it was desiccated under local anesthesia and the photograph shows how satisfactorily Nature filled in the depression, a result we could not have expected had x-ray or radium been employed. After lesion had healed patient was given a prophylactic dose of x-rays.

FIG. 6.—Case I, C. H., aged sixty-two, epithelioma arising in a healed lupus vulgaris; healed after desiccation.

With the monopolar current, a current of high voltage and low amperage, from an Oudin resonator of a high frequency machine we cause a dehydration or drying up of the tissues. This treatment is applied with an ordinary sewing needle held in a suitable handle. With the newer machines it has the decided advantage of being subject to a fineness of control which allows one to apply the heat where he will and to what degree he will in all accessible lesions. So delicate is the adjustment it can be throttled down practically to a pinpoint area, permitting one to work in the cornea of the eye or on the vocal cords.

The method is ideal for removing these small tumors of the eyelid which may be removed at their base without destroying much of the surrounding tissue. It does away with the contracted scar and consequent ectropion. Vernal catarrh responds to the brushing over of this current, as does leucoplakia. Desiccation is more or less painful and is done under local anesthesia.

Coagulation, the other form of endothermy, where the heavier and more powerful currents are used, require general

anesthesia. Chloroform or ether may be given but if the latter it must be removed from the room when the current is in actual use.

By means of the D'Arsonval or bipolar current, one of low voltage and high amperage, lesions of larger size and greater depth are given the more intense, penetrating action of this endogenous heat. The result is coagulation. The heat is supplied by connecting one pole of the machine to a well wet, indifferent electrode under the patient's buttocks as he lies upon the table. The other pole, the active electrode, is attached to handle in which is an ordinary steel darning needle. With this in hand any amount of coagulation necrosis can be described at will. Large areas on the surface may be destroyed, or smaller or larger lesions can be penetrated to any depth or coagulated through their entire thickness.

FIG. 7.—Case II, J. K., aged fifty-seven, depressed epithelioma in wing of nose; healed after desiccation.

The following cases were both satisfactorily treated by coagulation:

Case III.—A. J. V., aged seventy-seven. Eight years ago, following a scratch from a blackberry briar, a small scab appeared on the patient's right ear. His physician cauterized it and in the years that followed the lesion was variously treated by salves, pastes, scrapings and x-rays. When the patient came under my care almost the entire outer ear had been destroyed except at the superior angle. It was a foul, ulcerating, suppurating cavity with considerable pus discharging from the external auditory meatus. Pressure anteriorly also caused pus to exude. The patient was much debilitated; was a chronic nephritic with a blood pressure of 220. I was therefore loath to anesthetize him and referred him to one of our largest cancer institutions for radium

treatment. When this was refused, with the full consent of the family who knew the patient was a bad operative risk, under ether narcosis the wound was thoroughly coagulated and curetted. Observe lesion completely healed.

Case IV.—D. G., aged sixty-six, reported that about three months ago he noticed a small sore on the left side of his nose which rapidly increased in size. His physician applied salves and lotions and finally sent him to a hospital where he had five x-ray treatments. The lesion grew and became painful. The Wassermann was negative. Under complete anesthesia the lesion was coagulated and excised. Photographs indicate the progressive course of Nature's filling in process after the operation.

Coagulation by endothermy differs from other methods of cauterization by heat in that the active electrode is cold when applied. Heat comes from within as contact is made with the electrically heated tissues. It is therefore progressively penetrating according to the amount of current and the length of time applied. This is in contradistinction to heat applied from outside as with the Paquelin cautery, the Percy cautery or fulguration as advocated by deKeating-Hart.

Endothermy neither burns nor chars. It can be executed through a piece of paper, but I would take this opportunity to warn against its indiscriminate use. Irreparable harm may result from lack of technic.

It would appear that cases of inoperable cancer are on the decrease, partly for the reason that precancerous conditions are today, more promptly than ever before, recognized by both laity and practitioner, as possible malignancy. Another encouraging sign is the recognition by cancer specialists of the fact that no one method can successfully be employed against malignancy, surveying the field in general, the progressive surgeon appreciates the value of radium, the x-ray,

and endothermy. He again and again meets certain malignant conditions which yield to other methods more satisfactorily than to the knife.

May not sufferers from cancer confidently expect, therefore, that those charged with their care will study all the aids which are now available, suiting the treatment to the nature of malignancy?

CONCLUSIONS

We have learned to enumerate the advantages of endothermy as follows:

1. Decreased danger of metastasis and likelihood of recurrence.

2. Alleviation of pain.

3. Practically no hemorrhage.

4. Practically no surgical shock.

5. Accuracy of dosage; current under absolute control of operator.

6. Sterilization of wound incidental to treatment.

7. Patient's postoperative condition generally satisfactory leading to quick recovery and good cosmetic result.

My thanks are due Dr. George C. Andrews for taking the clinical photographs.

Reprinted from Fischer's Magazine